

Claims

1. A method for the detection of small quantities of particles by the detection of antigen-antibody precipitates which comprises:
 - providing an analyzing fluid that essentially contains particles with a given maximum particle size, the particles each having at least two antibody binding sites;
 - providing a fluid containing antibodies that essentially contains particles having a given maximum particle size;
 - contacting the sample fluid with the fluid containing the antibodies, which yields a reaction fluid where in the presence of particles having at least two antibody binding sites the antibodies can form an antigen-antibody precipitate;
 - directing a light beam through the reaction fluid;
 - detecting a signal by measuring with a photodetector the extinction at the light-dark boundary of the cone of light that is produced when the light generated by the laser is passing through the measuring cell containing the reaction fluid, the signal strength depending on the size and number of antigen-antibody precipitates formed.
2. A method according to claim 1, wherein the method has a detection sensitivity in the femtomolar or attomolar range.
3. A method according to claim 1, wherein the step of providing an analyzing fluid that essentially contains particles having a given maximum particle size selected from the group consisting of:
 - a) providing a fluid,
 - introducing an analyzing moiety into the fluid, and
 - separating particles that exceed a given particle size, in order to obtain an analyzing fluid that essentially contains only particles having a given maximum particle size; and
 - b) providing a fluid that essentially contains particles having a given maximum particle size and
 - introducing a sample into the fluid that essentially contains particles having a given maximum particle size, in order to obtain an analyzing fluid that essentially contains particles having a given maximum particle size.
4. A method according to claim 3, wherein the separation of the particles having a size

exceeding the given maximum particle size is effected by filtration, the filter having a pore size of preferably 20 – 450 nm, more preferably of 100 – 300 nm, and particularly of 200 nm.

5. A method according to claim 1, wherein at least two monoclonal antibodies or one polyclonal antibody are employed as antibodies.
6. A method according to claim 1, wherein the antibody is selected from the group consisting of immunoglobulin G or immunoglobulin M.
7. A method according to claim 1, wherein the method allows the quantity of particles to be detected quantitatively or semiquantitatively.
8. A method according to claim 1, wherein, at a constant concentration of antibodies, the decrease of the measured signal is directly related to the concentration of antigens.
9. A method according to claim 1 further comprising a computer program product comprising program code means stored in a computer readable medium, which when the computer program product is executed on a computer, a network device or a device, particularly an analytical detection device, reports the quantity of precipitate present.
10. A method according to claim 1 further comprising a computer program product comprising a program code downloadable from a server, which when the computer program product is executed on a computer, a network device or a device, particularly an analytical detection device, reports the quantity of precipitate present.
11. A kit for qualitative and/or quantitative detection of a given particle to be detected, wherein the given particle has at least two antibody binding sites, the kit comprising:
at least one antibody that is capable of specifically binding to the given particle, and
at least one suitable fluid for receiving the sample, and
a device for the detection of small quantities of particles comprising:
a laser,
a measuring cell, and
a photodetector designed for carrying out a measurement of extinction at the light-dark boundary of the cone of light that is produced when the light generated by the laser is passing through the measuring cell containing the particles in a fluid.